

1 / 25

SEQUENCE LISTING

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Yoshimasa Sakamoto

Maki Tawarada

Toshihisa Ohtsuka

<120> mammalian Prickle gene

<130> E1-A0207P

<140> PCT/JP03/15223

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<170> PatentIn Ver. 2.1

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<211> 847

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Ala Leu Glu Glu Tyr Ala Trp Val Pro Pro Gly Leu Lys Pro Glu Gln

35 40 45

Val His Gln Tyr Tyr Ser Cys Leu Pro Glu Glu Lys Val Pro Tyr Val

50 55 60

Asn Ser Pro Gly Glu Lys Leu Arg Ile Lys Gln Leu Leu His Gln Leu

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Pro Pro His Asp Asn Glu Val Arg Tyr Cys Asn Ser Leu Asp Glu Glu

85 90 95

Glu Lys Arg Glu Leu Lys Leu Phe Ser Asn Gln Arg Lys Arg Glu Asn

100 105 110

Leu Gly Arg Gly Asn Val Arg Pro Phe Pro Val Thr Met Thr Gly Ala

115 120 125

3 / 2 5

Ile Cys Glu Gln Cys Gly Gly Gln Ile Lys Gly Gly Asp Ile Ala Val

130

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140

Phe Ala Ser Arg Ala Gly His Gly Ile Cys Trp His Pro Pro Cys Phe

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165

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Gln Asp Gly Lys Ile Tyr Cys Gly Arg His His Ala Glu Cys Leu Lys

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Pro Arg Cys Ala Ala Cys Asp Glu Ile Ile Phe Ala Asp Glu Cys Thr

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Cys Glu Thr Val Leu Gly Gly Gln Arg Tyr Ile Met Lys Glu Gly Arg

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Pro Tyr Cys Cys His Cys Phe Glu Ser Leu Tyr Ala Glu Tyr Cys Asp

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Thr Cys Ala Gln His Ile Gly Ile Asp Gln Gly Gln Met Thr Tyr Asp

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4 / 2 5

Gly Gln His Trp His Ala Thr Glu Asn Cys Phe Cys Cys Ala His Cys

275

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Lys Lys Ser Leu Leu Gly Arg Pro Phe Leu Pro Lys Gln Gly Gln Ile

290

295

300

Phe Cys Ser Arg Ala Cys Ser Ala Gly Glu Asp Pro Asn Gly Ser Asp

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320

Ser Ser Asp Ser Ala Phe Gln Asn Ala Arg Ala Lys Glu Ser Arg Arg

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Ser Ala Lys Ile Gly Lys Asn Lys Gly Lys Thr Glu Glu Thr Met Leu

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Asn Gln His Ser Gln Leu Gln Val Ser Ser Asn Arg Leu Ser Ala Asp

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360

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Val Asp Pro Leu Ser Val Gln Met Asp Leu Leu Ser Leu Ser Ser Gln

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Thr Pro Ser Leu Asn Arg Asp Pro Ile Trp Arg Ser Arg Asp Glu Pro

385

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Phe His Tyr Gly Asn Lys Met Glu Gln Asn Gln Ser Gln Ser Pro Leu

5 / 2 5

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Gln Leu Leu Ser Gln Cys Asn Ile Arg Thr Ser Tyr Ser Pro Gly Gly

420

425

430

Gln Ala Ala Gly Ala Gln Pro Asp Met Trp Ala Lys His Phe Ser Asn

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440

445

Pro Lys Arg Ser Ser Ser Met Ala Leu Lys Gly His Gly Gly Ser Phe

450

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460

Ile Gln Glu Cys Arg Glu Asp Tyr Tyr Pro Gly Arg Leu Met Ser Gln

465

470

475

480

Glu Ser Tyr Ser Asp Met Ser Ser Gln Ser Phe Ser Glu Thr Arg Gly

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Ser Ile Pro Val Pro Lys Tyr Glu Glu Glu Glu Glu Glu Glu Glu

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505

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Glu Gly Gly Ile Ser Thr Gln Gln Cys Arg Pro Arg Arg Pro Leu Ser

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Ser Leu Lys Tyr Thr Glu Asp Met Thr Pro Thr Glu Gln Thr Pro Arg

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6 / 2 5

Gly Ser Met Glu Ser Leu Ala Leu Ser Asn Ala Thr Gly Leu Ser Ala
545 550 555 560

Glu Gly Gly Ala Lys Arg Gln Glu His Leu Ser Arg Phe Ser Met Pro
565 570 575

Asp Leu Ser Lys Asp Ser Gly Met Asn Val Ser Glu Lys Leu Ser Asn
580 585 590

Met Gly Thr Leu Asn Ser Ser Met Gln Phe Arg Ser Ala Glu Ser Val
595 600 605

Arg Ser Leu Leu Ser Ala Gln Gln Tyr Gln Glu Met Glu Gly Asn Leu
610 615 620

His Gln Leu Ser Asn Pro Leu Gly Tyr Arg Asp Leu Gln Ser His Gly
625 630 635 640

Arg Met His Gln Ser Phe Asp Phe Asp Gly Gly Ile Ala Ser Ser Lys
645 650 655

Leu Pro Gly Gln Glu Gly Val His Ile Gln Pro Met Ser Glu Arg Thr
660 665 670

Arg Arg Arg Thr Thr Ser Arg Asp Asp Asn Arg Arg Phe Arg Pro His
675 680 685

Arg Ser Arg Arg Ser Arg Arg Ser Arg Ser Asp Asn Ala Leu His Leu

690

695

700

Ala Ser Glu Arg Glu Val Ile Ala Arg Leu Lys Asp Arg Pro Pro Leu

705

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715

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Arg Ala Arg Glu Asp Tyr Asp Gln Phe Val Arg Gln Arg Ser Phe Gln

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Glu Ser Met Gly Gln Gly Ser Arg Arg Asp Leu Tyr Ser Gln Cys Pro

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Arg Thr Val Ser Asp Leu Ala Leu Gln Asn Ala Phe Gly Glu Arg Trp

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760

765

Gly Pro Tyr Phe Thr Glu Tyr Asp Trp Cys Ser Thr Cys Ser Ser Ser

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Ser Glu Ser Asp Asn Glu Gly Tyr Phe Leu Gly Glu Pro Ile Pro Gln

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795

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Pro Ala Arg Leu Arg Tyr Val Thr Ser Asp Glu Leu Leu His Lys Tyr

805

810

815

Ser Ser Tyr Gly Val Pro Lys Ser Ser Thr Leu Gly Gly Arg Gly Gln

8 / 2 5

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Leu His Ser Arg Lys Arg Gln Lys Ser Lys Asn Cys Ile Ile Ser

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tgctgcctgc ctccggaagg gctcagattc gcagagactc tgtaaaggag atgtttgggc 240

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actgaccaga tcaagactcg gtggcggctt cttctaaagc ttcgcggctc atcctctagg 360

aggaagatct gcctgcactg caagtgtccc caggaggagc ac atg gtg aca gtg 414

Met Val Thr Val

1

atg ccg ctg gag atg gag aag acc att agc aag ctc atg ttt gac ttc 462

Met Pro Leu Glu Met Glu Lys Thr Ile Ser Lys Leu Met Phe Asp Phe

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20

cag agg aat tca acc tca gat gac gac tcg ggc tgt gct ttg gaa gaa 510

Gln Arg Asn Ser Thr Ser Asp Asp Asp Ser Gly Cys Ala Leu Glu Glu

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tat gcc tgg gtc ccc ccg ggg ctg aag cct gag cag gtg cac cag tat 558

Tyr Ala Trp Val Pro Pro Gly Leu Lys Pro Glu Gln Val His Gln Tyr

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tat agc tgc ctc cca gaa gag aaa gtt ccc tat gtc aac agc cct gga 606

Tyr Ser Cys Leu Pro Glu Glu Lys Val Pro Tyr Val Asn Ser Pro Gly

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gag aaa ttg cga atc aag cag cta ctg cac cag ctg cca ccc cac gac 654

Glu Lys Leu Arg Ile Lys Gln Leu Leu His Gln Leu Pro Pro His Asp

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75

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10 / 25

aat gag gtt cgg tat tgc aac tcc ctg gac gag gag gag aag cgg gag 702

Asn Glu Val Arg Tyr Cys Asn Ser Leu Asp Glu Glu Glu Lys Arg Glu

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100

ctg aag ctg ttc agc aac cag agg aaa cgt gag aac ctg ggc cga ggc 750

Leu Lys Leu Phe Ser Asn Gln Arg Lys Arg Glu Asn Leu Gly Arg Gly

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110

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aat gtc agg ccc ttc ccc gtc acc atg aca ggg gct att tgc gaa cag 798

Asn Val Arg Pro Phe Pro Val Thr Met Thr Gly Ala Ile Cys Glu Gln

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tgt gga ggt cag att aag ggc ggc gac atc gct gtg ttt gca tca cgt 846

Cys Gly Gly Gln Ile Lys Gly Gly Asp Ile Ala Val Phe Ala Ser Arg

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gct ggc cat ggc atc tgc tgg cat cca cca tgc ttt ata tgc aca gtc 894

Ala Gly His Gly Ile Cys Trp His Pro Pro Cys Phe Ile Cys Thr Val

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tgc aat gag ctt ctg gtt gac ctg atc tac ttt tac caa gat ggg aag 942

Cys Asn Glu Leu Leu Val Asp Leu Ile Tyr Phe Tyr Gln Asp Gly Lys

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atc tac tgt ggc agg cac cat gct gag tgc ctg aag ccg cgc tgt gca 990

Ile Tyr Cys Gly Arg His His Ala Glu Cys Leu Lys Pro Arg Cys Ala

1 1 / 2 5

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gcc tgt gat gag atc atc ttt gca gat gag tgc aca gag gct gaa gga 1038

Ala Cys Asp Glu Ile Ile Phe Ala Asp Glu Cys Thr Glu Ala Glu Gly

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210

cga cat tgg cac atg aga cac ttc tgc tgc ttc gag tgt gag acg gtg 1086

Arg His Trp His Met Arg His Phe Cys Cys Phe Glu Cys Glu Thr Val

215

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ctg ggg ggc cag cgc tac atc atg aag gag gga aga ccc tac tgc tgt 1134

Leu Gly Gly Gln Arg Tyr Ile Met Lys Glu Gly Arg Pro Tyr Cys Cys

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cac tgc ttt gag tcc ctg tat gca gaa tat tgt gac acc tgt gcc caa 1182

His Cys Phe Glu Ser Leu Tyr Ala Glu Tyr Cys Asp Thr Cys Ala Gln

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cat ata gga att gac caa ggt caa atg acc tat gac ggc caa cac tgg 1230

His Ile Gly Ile Asp Gln Gly Gln Met Thr Tyr Asp Gly Gln His Trp

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cat gct acg gag aac tgt ttc tgc tgt gct cat tgt aag aag tct ctc 1278

His Ala Thr Glu Asn Cys Phe Cys Cys Ala His Cys Lys Lys Ser Leu

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Leu Gly Arg Pro Phe Leu Pro Lys Gln Gly Gln Ile Phe Cys Ser Arg

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gcc tgt agt gct ggg gag gac ccc aat ggc tct gac tca tct gat tca 1374

Ala Cys Ser Ala Gly Glu Asp Pro Asn Gly Ser Asp Ser Ser Asp Ser

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gcc ttc cag aat gcc aga gcc aag gag tct cgc cgc agt gcc aaa att 1422

Ala Phe Gln Asn Ala Arg Ala Lys Glu Ser Arg Arg Ser Ala Lys Ile

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ggc aag aac aag ggc aaa aca gag gaa acc atg ctg aac cag cac agc 1470

Gly Lys Asn Lys Gly Lys Thr Glu Glu Thr Met Leu Asn Gln His Ser

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cag ctg cag gtg agt tct aac cgg ctc tca gct gat gtg gac ccc ctg 1518

Gln Leu Gln Val Ser Ser Asn Arg Leu Ser Ala Asp Val Asp Pro Leu

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tca gtg cag atg gat ctc ctc agc ctg tcc agc cag acg ccc agc ctc 1566

Ser Val Gln Met Asp Leu Leu Ser Leu Ser Ser Gln Thr Pro Ser Leu

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aac cgg gac ccc att tgg agg agc cgg gat gag ccc ttc cat tac ggg 1614

Asn Arg Asp Pro Ile Trp Arg Ser Arg Asp Glu Pro Phe His Tyr Gly

1 3 / 2 5

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aac aag atg gag cag aac caa tcc cag agt cct ttg cag ctc ctc agc 1662

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cag tgc aac atc aga acg tcc tac agt cca gga ggg cag gca gca gga 1710

Gln Cys Asn Ile Arg Thr Ser Tyr Ser Pro Gly Gly Gln Ala Ala Gly

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gcc cag cct gac atg tgg gcc aag cac ttc agc aac ccc aag aga agc 1758

Ala Gln Pro Asp Met Trp Ala Lys His Phe Ser Asn Pro Lys Arg Ser

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tca tca atg gcc ctg aag ggg cac ggt ggc agt ttt atc cag gaa tgt 1806

Ser Ser Met Ala Leu Lys Gly His Gly Gly Ser Phe Ile Gln Glu Cys

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cgt gag gac tat tac cca ggg agg ctg atg tcc cag gag agc tac agc 1854

Arg Glu Asp Tyr Tyr Pro Gly Arg Leu Met Ser Gln Glu Ser Tyr Ser

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gat atg tct agc caa agc ttt agt gaa acc cga ggc agc atc ccg gtt 1902

Asp Met Ser Ser Gln Ser Phe Ser Glu Thr Arg Gly Ser Ile Pro Val

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1 4 / 2 5

ccc aag tat gag gag gag gag gag gag gag gag gaa gaa ggt ggc ata 1950

Pro Lys Tyr Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Gly Gly Ile

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tct acc cag cag tgc cgg ccc cgg cgt cca ctc agc tcc ctg aaa tac 1998

Ser Thr Gln Gln Cys Arg Pro Arg Arg Pro Leu Ser Ser Leu Lys Tyr

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aca gag gac atg aca ccc aca gaa cag act cct cgt ggc tct atg gaa 2046

Thr Glu Asp Met Thr Pro Thr Glu Gln Thr Pro Arg Gly Ser Met Glu

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tca ctg gcc ctg tca aat gca aca ggc ctg tct gct gaa ggt ggt gcc 2094

Ser Leu Ala Leu Ser Asn Ala Thr Gly Leu Ser Ala Glu Gly Gly Ala

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aag cgc cag gag cac cta tcc cgg ttt tcc atg cct gac ctc agc aaa 2142

Lys Arg Gln Glu His Leu Ser Arg Phe Ser Met Pro Asp Leu Ser Lys

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gac tct gga atg aat gtc tcg gaa aag ctg agc aac atg ggc act ctc 2190

Asp Ser Gly Met Asn Val Ser Glu Lys Leu Ser Asn Met Gly Thr Leu

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aac tcc tca atg caa ttc agg agc gca gag tct gtc cgc agc cta ctg 2238

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Asn Pro Leu Gly Tyr Arg Asp Leu Gln Ser His Gly Arg Met His Gln

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agc ttt gat ttt gat ggc ggc ata gcg agc agc aag cta cca ggg cag 2382

Ser Phe Asp Phe Asp Gly Gly Ile Ala Ser Ser Lys Leu Pro Gly Gln

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gaa ggt gtt cac atc cag ccc atg agt gag cgc acc cgg agg aga act 2430

Glu Gly Val His Ile Gln Pro Met Ser Glu Arg Thr Arg Arg Arg Thr

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Thr Ser Arg Asp Asp Asn Arg Arg Phe Arg Pro His Arg Ser Arg Arg

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Asn Glu Gly Tyr Phe Leu Gly Glu Pro Ile Pro Gln Pro Ala Arg Leu

790

795

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cga tat gtc aca agt gat gag ctc ctg cac aag tac agc tct tac ggt 2862

Arg Tyr Val Thr Ser Asp Glu Leu Leu His Lys Tyr Ser Ser Tyr Gly

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Val Pro Lys Ser Ser Thr Leu Gly Gly Arg Gly Gln Leu His Ser Arg

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aaa aga cag aag agc aaa aac tgt atc att tcg taatgtgatg gtggttgggg 2963

Lys Arg Gln Lys Ser Lys Asn Cys Ile Ile Ser

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Leu Gly Ser Gly Gly Met Gly Leu Pro Ser Ser Ser Ser Ala Ser Ala

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Leu Tyr Ala Ala Gln Ala Ala Ala Gly Ile Leu Pro Thr Ser Pro Leu

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Pro Leu Gln Arg His Gln Gln Tyr Leu Pro Pro His His Gln Gln His

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Pro Gly Ala Gly Met Gly Pro Gly Pro Gly Ser Gly Ala Ala Ala Gly

19 / 25

100

105

110

Pro Pro Leu Gly Pro Gln Tyr Ser Pro Gly Cys Ser Ala Asn Pro Lys

115

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Tyr Ser Asn Ala Gln Leu Pro Pro Pro Pro His His His His Gln Leu

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Ser Pro Ala Leu Ser Thr Pro Ser Pro Pro Ser Leu Leu His His Pro

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Ala Gly Gly Thr Ser Ser Ala Ser Ala His Ala Pro Phe Leu Gly Gly

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Pro His Met Asp Met Gln Arg Gln Ser His Ser Asp Asp Asp Ser Gly

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Cys Ala Leu Glu Glu Tyr Thr Trp Val Pro Pro Gly Leu Arg Pro Asp

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Gln Val Arg Leu Tyr Phe Ser Gln Ile Pro Asp Asp Lys Val Pro Tyr

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Val Asn Ser Pro Gly Glu Gln Tyr Arg Val Arg Gln Leu Leu His Gln

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230

235

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20 / 25

Leu Pro Pro His Asp Asn Glu Val Arg Tyr Cys His Ser Leu Thr Asp

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Glu Glu Arg Lys Glu Leu Arg Leu Phe Ser Thr Gln Arg Lys Arg Asp

260

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Ala Leu Gly Arg Gly Asn Val Arg Gln Leu Met Ser Ala Arg Pro Cys

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285

Asp Gly Cys Asp Asp Leu Ile Ser Thr Gly Asp Ile Ala Val Phe Ala

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Thr Arg Leu Gly Pro Asn Ala Ser Trp His Pro Ala Cys Phe Ala Cys

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Ser Val Cys Arg Glu Leu Leu Val Asp Leu Ile Tyr Phe His Arg Asp

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Gly Arg Met Tyr Cys Gly Arg His His Ala Glu Thr Leu Lys Pro Arg

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Cys Ser Ala Cys Asp Glu Ile Ile Leu Ala Asp Glu Cys Thr Glu Ala

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Glu Gly Arg Ala Trp His Met Asn His Phe Gly Cys His Glu Cys Asp

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21 / 25

Lys Gln Leu Gly Gly Gln Arg Tyr Ile Met Arg Glu Gly Lys Pro Tyr

385 390 395 400

Cys Leu His Cys Phe Asp Ala Met Phe Gly Glu Tyr Cys Asp Tyr Cys

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Gly Glu Gly Ile Gly Val Asp Gln Gly Gln Met Ser His Asp Gly Gln

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His Trp His Ala Thr Asp Glu Cys Phe Ser Cys Asn Thr Cys Arg Cys

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Ser Leu Leu Gly Arg Ala Phe Leu Pro Arg Arg Gly Gly Ile Tyr Cys

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Ser Ile Ala Cys Ser Lys Gly Glu Pro Pro Thr Pro Ser Asp Ser Ser

465 470 475 480

Gly Thr Gly Met Tyr Thr Thr Pro Thr Pro Pro Thr Gln Gly Val Arg

485 490 495

Pro His Pro Gln Ala Pro Leu Pro Ala Arg Ile Pro Ser Ser His Ala

500 505 510

Ser Ser Ser Pro Pro Met Ser Pro Gln Gln Gln Gln Gln His Gln Ala

2 2 / 2 5

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525

Thr Phe Asn Gln Ala Met Tyr Gln Met Gln Ser Gln Gln Met Glu Ala

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535

540

Ala Gly Gly Leu Val Asp Gln Ser Lys Ser Tyr Ala Ala Ser Asp Ser

545

550

555

560

Asp Ala Gly Val Val Lys Asp Leu Glu His Gly Gly His Met Gly Gly

565

570

575

Gly Asp Leu Thr Asp Phe Ser Gly Gly Arg Ala Ser Ser Thr Ser Gln

580

585

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Asn Leu Ser Pro Leu Asn Ser Pro Gly Asp Phe Gln Pro His Phe Leu

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600

605

Pro Lys Pro Met Glu Leu Gln Arg Asp Gly Val Tyr Asn Phe Asn Glu

610

615

620

Met Ser Ser Asn Leu Asp Ala Ala Trp Pro Ala Lys Pro Thr Asn Ser

625

630

635

640

Tyr His Leu Gln Arg Gln Leu Leu Glu Asn Pro His Thr Ala Ser Met

645

650

655

23 / 25

Pro Glu Leu Ala Gly Lys Leu Val Ala Pro Pro Ala His Met Gln His

660

665

670

Leu Ser Gln Leu His Ala Val Ser Ser His Gln Phe Gln Gln His Glu

675

680

685

Tyr Ala Asp Ile Val His Pro Pro Pro Pro Pro Pro Gly Glu Ile Pro

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695

700

Glu Leu Pro Thr Pro Asn Leu Ser Val Ala Ser Thr Ala Leu Pro Pro

705

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715

720

Glu Leu Met Gly Ser Pro Thr His Ser Ala Gly Asp Arg Ser Leu Asn

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735

Thr Pro Met Ser Thr Gln Ser Ala Ser His Ala Pro Pro His Pro Val

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Ser Ile Leu Ser Gly Ala Ser Ser Ser Ser Pro Met Ser Gly Glu Pro

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Ala Lys Lys Lys Gly Val Arg Phe Glu Gly Ile Pro Asp Thr Leu Pro

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Arg Ser Arg Ser Tyr Ser Gly Asn Gly Ala Gly Thr Ser Ser Gly Gly

785

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795

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24 / 25

Glu Arg Glu Arg Asp Arg Asp Lys Asp Lys Glu Gly Gly Gly Arg His

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810

815

Gly His Gly His Ser Ser Arg Arg Arg Arg Arg Arg Lys Ser Ser Ser

820

825

830

Ser Ser Ser His His Arg Ser Gly Ser Gly His Arg Ser His Ser Thr

835

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Thr Arg Ala Asp Thr Tyr Ala Pro Ala Gln Pro Leu Ser Ser Ser Tyr

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855

860

Gln Gly Pro Pro Ser Val Leu Gln Ala Ala Asn Leu Val His Glu Ser

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870

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880

Pro Ser Arg Gln Gln Arg Glu Arg Glu Arg Glu Arg Glu Arg Lys Glu

885

890

895

Ser Glu Glu Ser Asp Val Cys Ser Thr Cys Ser Ser Ser Ser Ser Ser

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Ser Glu Asp Tyr Met Met Met Tyr Gln Leu Pro Gln Arg Arg His Tyr

915

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Gly Gly Val Arg Val Ser Tyr Val Pro Asn Asp Ala Leu Ala Tyr Asp

2 5 / 2 5

930

935

940

Arg Lys Arg Lys Pro Ser Glu Leu Gly Gly Asp Lys Asp Lys Asn Cys

945

950

955

960

Ile Ile Ser